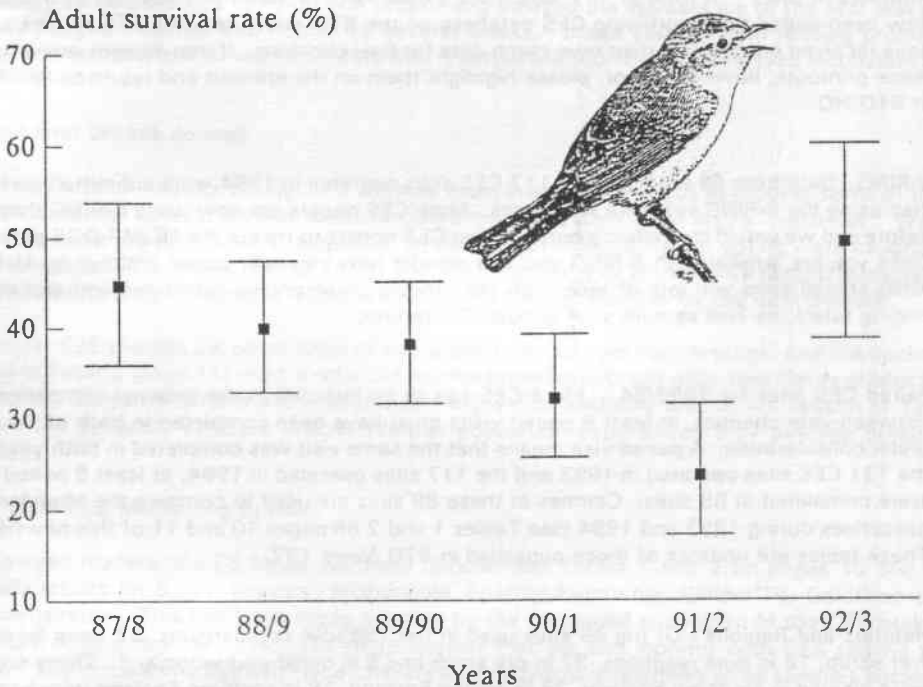


CES News



Number Eight

Survival rates of Willow Warblers tumble in the south



Counts of breeding Willow Warblers declined by nearly 50% in southern Britain between 1986 and 1993. Recapture rates of Willow Warblers at CES sites indicate a major reduction in adult survival rates (above). Increased mortality amongst adult birds seems to have caused the decline, but exactly why so many Willow Warblers died during the early 1990s remains a mystery. *Full story on page 9.*

This is the eighth edition of CES News, the newsletter for the British Trust for Ornithology's Constant Effort Sites Scheme. If you require further copies of this newsletter please contact Will Peach at BTO HQ.

The aim of the CES Scheme is to monitor changes in the populations and breeding success of a range of common passerines within Britain and Ireland. Each summer between May and August, volunteer ringers make twelve visits to their chosen site where they erect a series of mist nets in standard positions for a fixed period of time. By combining data from more than 100 sites, changes in the size of the adult catch are used as a measure of changing population size, whilst the percentage of young birds provides an index of annual breeding success. When a site is operated for several years in succession then between-year recaptures can be used to calculate survival rates of adult birds.

CES RINGING IN 1994

Numbers of Sites - A total of 117 sets of CES data were received in 1994. All of these have now been added to the growing CES database on the BTO computer. All CES ringers should have received printouts of their own catch data for final checking. If you do spot any errors on these printouts, however minor, please highlight them on the printout and return to Will Peach at BTO HQ.

B-RING - Data from 63 (54%) of the 117 CES sites operated in 1994 were submitted on floppy disc using the B-RING software for ringers. More CES ringers are now using B-RING than ever before and we would strongly encourage other CES ringers to try out the PC/MS-DOS software. Once you are familiar with B-RING you will wonder how you ever coped without it. Using B-RING should save you lots of time with the production of ringing schedules and end-of-year ringing totals, as well as with your annual CES returns.

Paired CES sites for 1993/94 - For a CES site to be included in the national comparisons of between-year changes, at least 8 paired visits must have been completed in both of the years under consideration. A paired visit means that the same visit was completed in both years. Of the 121 CES sites operated in 1993 and the 117 sites operated in 1994, at least 8 paired visits were completed at 89 sites. Catches at these 89 sites are used to compare the abundance of passerines during 1993 and 1994 (see Tables 1 and 2 on pages 10 and 11 of this newsletter). These tables are updates of those published in *BTO News* 197.

Habitats and Regions - Of the 89 sites used in the 1993/94 comparisons, 33 were located in wet scrub, 18 in pure reedbeds, 32 in dry scrub and 6 in deciduous woodland. Thirty-six sites were located in southern England, 26 in central England, 18 in northern England (these regions are those defined on age-specific totals), 4 in Wales, 3 in Scotland and 2 in Ireland. These figures emphasize the very great need for more long-running CES sites in Wales, Scotland and Ireland.

Adult Catches Improve but Long-term Declines Continue

1994 was the second year in succession that adult catches of both resident and migratory species increased. These increases were significant for 7 of the 28 species listed in Table 1, and there were no significant declines in catches.

The fortunes of songbird populations seem to be diverging with several species doing very well and others stuck in long-term declines. Robins and Greenfinches were commoner in 1994 than in any year since the start of CES ringing in 1981, whilst Wrens, Dunnocks, Garden Warblers and Whitethroats have now recovered the massive losses of 1991 (*BTO News* 179). On the down side, breeding populations of species like Song Thrush, Lesser Whitethroat, Willow Warbler, Linnet, Redpoll, Bullfinch and Reed Bunting are now much lower than they were in the mid-1980s.

Stormy Weather Wrecks Early Nests ...

Despite the increased numbers of breeding adults, catches of young birds were generally well down on the exceptional catches of 1993. Unusually cold, wet and windy weather during April and May caused the loss of many first broods and delayed the appearance of the first wave of newly-fledged thrushes and Robins by several weeks. These early season nesting problems were first realised by BTO nest recorders who reported abandoned nests, delayed incubation and small brood sizes.

... but later broods do well

Warmer, settled weather during June allowed multi-brooded songbirds to recover some of their early losses, but for species with a less flexible breeding system 1994 was a 'wash-out'. Worst affected were the tits (Table 1, page 10). In the case of Great Tit fewer young were caught on CES sites than in any year except 1989, and the percentage of young birds caught (a measure of overall breeding success) in 1994 was the lowest ever recorded by the CES method.

For most CES species the percentage of young birds caught was near average, and the declines listed in Table 2 (page 11) mark a return to normal breeding success after two highly productive seasons. Garden Warblers and Treecreepers enjoyed a relatively productive season in 1994 whilst the seriously depleted Willow Warbler population experienced only average breeding success.

Five New CES Monitoring Species

Eagle-eyed readers of *CES News* will have noticed that Tables 1 and 2 on pages 10 and 11 include results for 5 new species - Nightingale, Spotted Flycatcher, Willow Tit, Goldfinch and Yellowhammer. This has been made possible by the continued expansion of the CES project as more ringers register sites. The more species that we can monitor with CES ringing the better. Nightingale and Spotted Flycatcher are included despite relatively small samples because both are species of growing conservation concern.

Turn to the Back Page for a review of long-term trends in CES catches of Reed Buntings

Unusual Captures in 1994

Grey Heron - Norfolk
 Shelduck - Gloucestershire
 Teal - South Yorkshire
 Merlin - Humberside
 Water Rail - Co Tyrone

Snipe - Derbyshire
 Barn Owl - Lincolnshire
 Peking Robin - Cumbria
 Marsh Warbler - Essex
 Firecrest - Herts, Norfolk

CES Bird-of-the-Year for 1994 has got to be Terry Robinson's Peking Robin!

Selected Retraps/Recoveries

7P3202	Wren	5F Retrap	3.4.88 2.6.94	Waterloo Thorns CES, Beds Waterloo Thorns CES, Beds
J370738	Sedge Warbler	3J Control	9.8.94 6.8.94	Errol, Tayside Westbere CES, Kent
E215573	Reed Warbler	4M Retrap	25.6.87 20.5.95	Bainton CES, Cambs Bainton CES, Cambs
E895227	Garden Warbler	4M Retrap	22.5.88 6.5.95	Occupation Lane CES, Lincs Occupation Lane CES, Lincs <i>(this bird is now at least 8 years old)</i>
J214288	Garden Warbler	4F Control	8.5.94 20.6.94	Steps Hill CES, Bucks Pittsford Resv., Northants (58km north) <i>(not all adults caught on CES sites are local breeders)</i>
RV05473	Garden Warbler	1 Control	2.6.89 7.7.89	Hartley Witney, Hants Dinton Pastures CES, Berks <i>(juvenile caught at CES site, fledged 19km away)</i>
H887844	Blackcap	3M Control	24.7.93 2.5.94	Betley Mere CES, Staffs Anzegem, Belgium
H864621	Blackcap	3F Shot	22.8.92 22.10.93	Tickhill CES, S.Yorks Oiartzun Guipuzcoa, Spain (1127 km south)
8F5597	Willow Warbler	3F Control	28.7.93 23.4.94	Llangedfedd Resv. CES, Gwent Port Erin, Isle of Man
C191349	Reed Bunting	3 Retrap	17.7.87 31.7.94	Strand Lough CES, Co Down Strand Lough CES, Co Down

**TOP 20 CES SITES FOR CATCHES OF
ADULTS AND YOUNG IN 1994**

Rank	Site No.	Total Adult Catch	Site No.	Total Juvenile Catch
1	276	400	276	756
2	150	317	234	674
3	330	300	4	667
4	144	298	330	605
5	320	287	350	576
6	167	285	150	504
7	28	272	143	481
8	152	254	300	466
9	326	251	229	433
10	350	249	301	420
11	234	243	336	407
12	310	242	320	405
13	300	237	70	395
14	4	231	310	392
15	296	229	154	385
16	229	226	135	372
17	154	219	251	359
18	275	219	321	353
19	84	218	167	351
20	86	217	295	349

N.B. To be included in this analysis at least 9 main CES visits must have been completed in 1994.

TOP 10 CES SITES FOR ADULT WARBLERS

In order to get useful information on survival rates it is essential that good numbers of adults are trapped each year and that a site is operated in the same constant way for several years in succession. In order to get some idea of the CES sites currently generating the best information on adult survival rates, the next two pages show the top ten sites for adult catches of each of the eight common warblers. It is very important to the future of the CES Scheme that good numbers of adult birds are caught on CES sites.

Sedge Warbler			
Rank	Site Number	Adult catch in	
		1993	1994
1	326	39	48
2	256	38	45
3	150	27	54
4	86	30	48
5	301	37	34
6	276	25	38
7	278	25	37
8	4	27	34
9	186	28	29
10	331	26	27

Reed Warbler			
Rank	Site Number	Adult catch in	
		1993	1994
1	333	119	136
2	276	107	103
3	154	87	89
4	232	90	77
5	331	76	80
6	182	71	82
7	150	71	81
8	82	50	95
9	239	64	64
10	86	55	69

Lesser Whitethroat			
Rank	Site Number	Adult catch in	
		1993	1994
1	330	12	12
2	276	13	9
2	310	7	15
4	70	9	11
5	152	8	8
5	167	11	5
5	255	11	5
8	277	10	5
8	323	9	6
10	92	6	8
10	324	10	4

Whitethroat			
Rank	Site Number	Adult catch in	
		1993	1994
1	254	25	28
2	323	23	28
3	330	15	29
4	293	23	20
5	295	19	16
6	70	12	22
6	257	18	16
8	275	12	19
9	234	13	17
10	144	15	14

TOP 10 CES SITES FOR ADULT WARBLERS

Garden Warbler			
Rank	Site Number	Adult catch in	
		1993	1994
1	350	26	33
2	330	18	19
3	296	13	19
4	276	13	18
5	160	16	14
5	288	12	18
7	303	16	13
8	162	14	14
8	295	11	17
10	4	14	11

Blackcap			
Rank	Site Number	Adult catch in	
		1993	1994
1	350	34	34
2	152	22	39
3	4	21	30
4	276	23	27
5	13	20	20
5	144	18	22
7	263	16	22
8	288	15	22
9	229	17	19
10	275	16	19

Chiffchaff			
Rank	Site Number	Adult catch in	
		1993	1994
1	152	21	23
2	4	15	7
2	25	9	13
4	263	8	13
5	84	8	12
6	275	10	8
6	296	11	7
8	54	9	7
8	154	10	6
8	276	9	7

Willow Warbler			
Rank	Site Number	Adult catch in	
		1993	1994
1	320	102	94
2	310	51	86
3	300	56	72
4	215	58	47
5	229	41	58
6	123	39	50
7	326	53	34
8	330	40	45
9	301	36	39
10	243	52	22

NB To be included all sites must have completed at least 8 paired visits in 1993 and 1994

The Vital Contributions of Smaller CES Sites

All contributions to the CES Scheme are valuable and if, like me, your site does not feature in the tables listed above, you should not conclude that all your hard work has been in vain. The national CES results are based upon captures made at all sites (large and small) which achieve constant and intensive effort over the years. Without the contributions from the many smaller sites we would not be able to conclude very much about changes in numbers and breeding success of most of the bird populations we are aiming to monitor. A small site operated over many years is much more valuable than a larger site operated for just a few years.

- New Habitat Recording

All CES ringers should have received details of the new habitat recording back in March. CES ringers are reminded that habitat recording should take place either during the second half of July or the first half of August. Please don't be put off by the detailed instructions - much of the text is devoted to a worked example. Carefully read the instructions from beginning to end before you attempt to record your habitat, and let us know if you think the methods need modification. We realise that this is yet another job for busy CES ringers, but we will not be asking all CES ringers to record the habitat every year.

A big thankyou to all those ringers that recorded habitat at 31 CES sites during 1994. Your comments and suggestions have allowed us to improve and simplify the final instructions. The main changes to the final set of habitat recording instructions concern the measurement of scrub height. There are two major changes:

- (1) Instead of measuring scrub height along a fixed line, we are now asking you to measure the maximum height of scrub and low trees (i.e. woody vegetation) within 5m of the net.
- (2) Reeds, herbs, nettles and grasses are not woody vegetation and should therefore be given a scrub height of zero metres. It is changes in the average height of the woody scrub vegetation that we are wanting to record, not changes in the height of the field layer.

- Publications/Research

One major piece of research completed during the past year was an investigation into how between-year changes in catches at CES sites differ between regions of Britain, between sites in dry and wet habitats and between coastal sites and inland sites. Captures of juveniles are consistently higher at CES sites dominated by wet scrub and reeds, compared to catches in dry scrub and woodland. A paper summarising these and other findings has been accepted for publication in *Bird Study* and should appear some time in 1996.

A detailed analysis of mark-recapture data for Wrens and Treecreepers at Treswell Wood CES in Nottinghamshire will be published later this year in *Ibis*. This paper considers the movements and survival rates of Wrens and Treecreepers over the last 20 years. Wrens were clearly susceptible to cold winter weather but Treecreepers seemed to be die more during wet winters.

Mike Boddy has published another paper from his long-running study at Theddlethorpe Dunes in Lincolnshire (*Ringling and Migration*, 1994, vol 15, pages 65-78). This time Mike considered the survival rates and juvenile dispersal of Lesser Whitethroats, which have been increasing in numbers during recent years.

- Survival rates of Willow Warblers (*front page story*)

Until the late 1980s the Willow Warbler was one of the most stable species to be monitored by the BTO's Common Birds Census. However, this changed suddenly during the late 1980s, with a massive decline of nearly 50% in the numbers of breeding pairs in southern Britain. Curiously there was no indication of any real decline in northern England and Scotland.

In order to investigate the possible causes of this sudden decline in southern Britain, nest record cards were analysed to see if breeding success had declined, and recaptures of ringed birds at CES sites were used to calculate adult survival rates. Nesting success had declined slightly in the south but this change was not large enough to account for the massive population decline. Survival rates of adult Willow Warblers were found to have declined dramatically. In normal years about 45% of adult Willow Warblers survive the long journey to Africa and return to breeding sites, but during 1991/92 only 24% of adults survived. This massive decline in survival coincided exactly with the observed population decline and when survival rates improved in 1992/93 the population stopped declining. Survival rates of Willow Warblers in northern Britain did not decline in the same way, which also fits in with the observed population changes.

This study provides another important example of how CES ringing is providing unique and reliable insights into the changing fortunes of British bird populations. Not only have we been able to show that declines in adult survival rates were the probable cause of the population decline, we have also shown that trends in survival rates have differed between the north and south of Britain.

Survival rates can only be calculated if CES sites are operated for a good number of years. This study of Willow Warbler survival was based upon recaptures at 20 CES sites operated in a standardised way between 1987 and 1993. A very big thank you to the following ringers and groups who have kept their CES sites operating over this long period:

R D Wilson (Berks), Llangorse RG (Powys), M F Carrier (Cumbria), J D Fletcher (Merseyside), M Boddy (Lincs), L J Milton (Tyne & Wear), B Galloway (Tyne & Wear), Dubbs Moss RG (Cumbria), W T Thrower (Norfolk), C Gorman & D M Smith (S Yorks), Rutland Water RG (Leics), I Grier (Wilts), S C Norman (Cleveland), D M Francis (Northants), Hughenden RG (Oxon), J E Pattison (Northumberland), C J Mead & Tring RG (Bucks), J Cobb (Fife), D Hazard (S Yorks). Thanks also to Mike Lawn who provided data from his intensive colour-ringing study in Surrey.

A full account of the Willow Warbler story will be published later this year in the Proceedings of the EURING '94 Technical Conference, held in Washington DC in September 1994. A shorter article was published earlier this year in *BTO News* no. 197.

- STOP PRESS - the 1995 CES Season

After fine and settled weather during early May, conditions in eastern Britain have often been poor for mist-netting. Early reports tell of good catches of breeding residents and of returning migrants. One species which seems to be rather thin on the ground this year is Blackcap.

Please try to return your 1995 CES data promptly. Any returns not received by the end of November may not be included in the annual report published in *BTO News*.

Table 1. Changes in captures on CES sites from 1993 to 1994 (all 12 visits).

Species	ADULTS				JUVENILES			
	n	Total 1993	Total 1994	% Change	n	Total 1993	Total 1994	% Change
Wren	86	607	667	+10	88	1950	1632	-16 *
Dunnoek	85	558	625	+12 *	88	1215	1024	-16 *
Robin	86	456	522	+15 *	87	1855	1624	-12 *
Nightingale	18	42	40	-5	13	23	18	-22
Blackbird	87	773	912	+18 *	87	768	741	-4
Song Thrush	83	309	287	-7	74	296	221	-25 *
Sedge Warbler	65	808	930	+15 *	68	1203	1344	+12
Reed Warbler	58	1626	1753	+8 *	62	1569	1787	+14
Lesser Whitethroat	55	210	179	-15	64	469	288	-39 *
Whitethroat	63	376	434	+15 *	67	640	702	+10
Garden Warbler	72	407	427	+5	77	607	579	-5
Blackcap	84	709	786	+11 *	86	2202	1756	-20 *
Chiffchaff	72	252	265	+5	84	1062	992	-7
Willow Warbler	84	1371	1420	+4	87	2682	2455	-8
Spotted Flycatcher	22	29	18	-38	19	23	12	-48
Long-tailed Tit	81	443	414	-7	79	1196	966	-19 *
Willow Tit	33	47	51	+9	44	167	114	-32 *
Blue Tit	88	520	521	0	88	2652	1919	-28 *
Great Tit	86	387	429	+11	88	1497	845	-44 *
Treecreeper	44	61	73	+20	77	221	203	-8
Chaffinch	79	490	532	+9	70	408	423	+4
Greenfinch	53	233	249	+7	32	61	100	+64
Goldfinch	44	88	117	+33	30	103	70	-32
Linnet	31	95	102	+7	17	53	54	+2
Redpoll	18	66	72	+9	11	56	52	-7
Bullfinch	81	495	536	+8	76	410	344	-16
Yellowhammer	22	45	57	+27	14	28	39	+39
Reed Bunting	60	323	344	+7	50	248	226	-9

n = number of paired sites

Total = number of individuals captured at all paired sites

* = significant change at the 5% level

Table 2. Changes in the percentage of juveniles caught at CES sites 1993 to 1994.

PAIRED SITES 1993-94				
Species	n	% juv 1993	% juv 1994	Diff in % juv
Wren	87	76	71	-5 *
Dunnock	86	68	62	-6 *
Robin	87	80	76	-4 *
Nightingale	9	35	31	-4
Blackbird	86	50	45	-5
Song Thrush	77	49	44	-5
Sedge Warbler	60	60	59	-1
Reed Warbler	56	49	50	+1
Lesser Whitethroat	51	69	62	-7
Whitethroat	62	63	62	-1
Garden Warbler	68	60	58	-2
Blackcap	83	76	69	-7 *
Chiffchaff	74	81	79	-2
Willow Warbler	86	66	63	-3
Spotted Flycatcher	11	44	40	-4
Long-tailed Tit	78	73	70	-3
Willow Tit	32	78	69	-9
Blue Tit	88	84	79	-5 *
Great Tit	86	80	67	-13 *
Treecreeper	62	78	74	-4
Chaffinch	71	45	44	-1
Greenfinch	33	21	29	+8
Goldfinch	21	54	37	-17
Linnet	17	36	35	-1
Redpoll	12	46	42	-4
Bullfinch	76	45	39	-6
Yellowhammer	14	38	40	+2
Reed Bunting	52	43	40	-3

n = number of paired sites

% juv = percentage of captures which were juveniles

Diff in % juv = % juveniles in 1994 minus % juveniles in 1993

(* statistically significant change at 5% level)

Reed Buntings Failing To Recover

The BTO's Common Birds Census and the Waterways Bird Survey have shown that Reed Buntings declined dramatically as a breeding species on farmland and along rivers during the late 1970s and early 1980s. Captures at reedbed CES sites suggest that breeding adults have declined further since 1984 with only a hint of a recovery since 1992 (Figure, top).

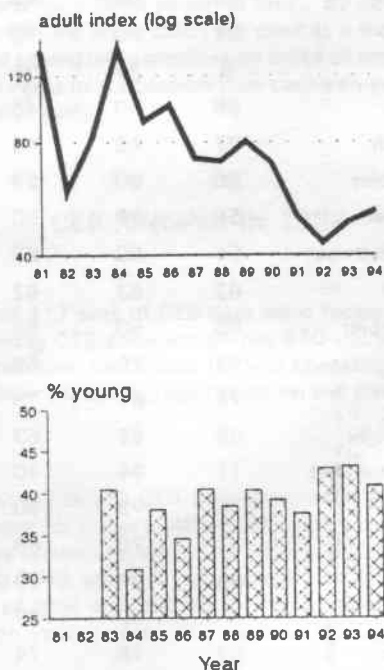


Figure. Changes in the abundance of adult Reed Buntings and in the percentage of young Reed Buntings caught on CES sites. Samples of young birds were relatively small before 1983.

The numbers of young Reed Buntings caught on CES sites have also declined since the mid-1980s, and in 1994 fewer young were caught than in any previous year of CES ringing. However, the percentage of young Reed Buntings in the overall catch (an indirect measure of breeding success) has been higher in recent years compared to the mid-1980s (Figure, bottom). Nest record cards also suggest improved breeding success for Reed Buntings in recent years (BTO News 196). The size of the British Reed Bunting population might well be limited by the availability of food in winter. The provision of large areas of 'set-aside' land might help in this respect but for now there is little indication of any recovery in numbers.

The Constant Effort Sites Scheme forms part of the BTO's Integrated Population Monitoring Programme carried out under contract from the Joint Nature Conservation Committee on behalf of English Nature, Scottish Natural Heritage and the Countryside Council for Wales, and under a contract from the Department of the Environment for Northern Ireland.

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